

### Remarks

In the Final Office Action mailed May 15, 2006:

1. Claims 1-6, 9-11, 32, 35-37, 41, 47 and 65 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,367,517 (Cidon) and U.S. Patent Publication No. 2002/0057651 (Roberts);
2. Claims 8 and 33-34 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Cidon and Roberts, in view of U.S. Patent No. 6,934,752 (Gubbi);
3. Claims 12, 42-43, 45, 48-49, 52, 54, 57-58 and 63 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Cidon and Roberts, in view of U.S. Patent No. 6,937,580 (Heatwole);
4. Claims 40, 44 and 46 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Cidon and Roberts, in view of U.S. Publication No. 2002/0071450 (Gasbarro);
5. Claims 53, 59, 60 and 61 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Cidon, Roberts and Heatwole, in view of Gubbi; and
6. Claims 13-22, 26-30 and 31 were allowed.

#### I Roberts (U.S. Patent Publication No. 2002/0057651)

Roberts is directed to managing micro-flows of packets and, more particularly, to guaranteeing different QoS (qualities of service) to different micro-flows. The QoS associated with a micro-flow is characterized by a set of descriptors communicated as part of the first packet of a micro-flow (Abstract; Summary).

#### **A. Roberts Does Not Teach A Desired Bandwidth Never Less than a Target Bandwidth**

In claimed embodiments of the invention (e.g., claims 1, 12, 32, 49, 52, 57), a communication dispatched from a source node to a destination node includes a modifiable value and a fixed value representing bandwidths for a communication channel between the source and destination nodes. The bandwidth represented by the fixed value can *never be less* than the modifiable value because the fixed value represents the source node's desired or optimal bandwidth for the channel. The modifiable value represents a target bandwidth that may be adjusted by intermediate nodes (e.g., switches) to reflect how much bandwidth they can actually

allocate to the channel.

Roberts was cited as teaching a desired bandwidth that is never less than a target bandwidth (paragraph 1 of the office action), in that a predetermined guaranteed rate 330 is supposedly never less than a variable available rate 350 (Fig. 3B; page 4, paragraph [0039]). Applicant respectfully disagrees with this interpretation of Roberts. As described below, Roberts specifically suggests setting the guaranteed rate to zero.

Figure 3B of Roberts illustrates a QoS field of a first packet of a micro-flow (paragraph [0030]), which includes values including the guaranteed rate (GR) 330, available rate (AR) 350, weighting factor (W) 320, and so on. Paragraph [0039] merely mentions the per-flow QoS information and states that each switch in a network can to individually manage each micro-flow to support the QoS constraints. There is no mention in paragraph [0039] of any relation between bandwidth values such as those represented by GR and AR.

Paragraph [0046] describes the QoS field of Figure 3B and the individual descriptors (e.g., GR 330, AR 350), and states that a micro-flow can be characterized as AR traffic, GR traffic or MR (maximum rate) traffic based on the descriptors.

Paragraph [0047] describes AR traffic as micro-flows that do not have real-time requirements and therefore have loose delay variation and jitter characteristics. MR traffic, however, does have real-time characteristics and may include voice or video data conveyed via a real-time protocol. There is no MR descriptor in the QoS field of Figure 3B because QoS characteristics of MR micro-flows are derived by packets' arrival rates into a switch.

Finally, paragraph [0047] describes GR traffic as being similar to MR traffic except that the guaranteed rate value 330 is communicated to the network ahead of time (e.g., through explicit signaling, a user-defined traffic profile). Paragraph [0048] reports that a GR value 330 may be used to guarantee a micro-flow a specific rate, which may be a 10-bit floating point number.

Also in paragraph [0048], it is directly stated that Roberts' "desired bandwidth" is usually less than the available rate, showing that Roberts does not teach this element of Applicant's invention: "For AR traffic and MR traffic, the GR value 330 typically is set to zero."

The AR value 350, in contrast, will almost certainly be *greater than zero*. In paragraph [0051], the AR value of a micro-flow is described as being based on the micro-flow's classification and the QoS criteria and may be calculated based on the micro-flow's type of

traffic. For example, for a new micro-flow received at a switch, the AR value may be calculated based on the available rates of the other linecards in the switch (see Figure 4).

Paragraph [0052] also teaches that the GR value that is typically zero (according to paragraph [0048] will be less than the AR value. Specifically, paragraph [0052] reports:

for MR traffic, the AR value is set to “a higher value” (it is unclear what the AR value is set higher *than*, but if it is higher than *any* value it must be higher than the typically zero value of GR).

for GR traffic, AR is typically set to a predetermined GR value plus a percentage of available unreserved capacity. As shown in paragraph [0048] GR traffic is the only traffic for which the GR value may not typically be set to zero; paragraph [0052] now shows that *regardless* of the value of GR for GR traffic, AR will be set to a higher value.

for AR traffic, the AR value is calculated based on the AR value per micro-flow of an egress linecard.

Thus, regardless of which type of traffic a micro-flow represents (i.e., AR, GR, MR), the GR is almost certainly less than the AR value. This directly contradicts claims of Applicant’s invention in which a desired bandwidth is never less than a target bandwidth.

## II Selected Claims

### A. **Claims 1-11, 12 & 65**

In claims 1 and 12, a communication (e.g., a packet) carries two values – a modifiable value representing a target bandwidth and a fixed value representing a desired or optimal bandwidth. The modifiable value can never be greater than the fixed value. As described above in Section I.A, Roberts teaches the opposite – that the “guaranteed rate” (GR) is less than the “available rate” (AR). Thus, Roberts teaches away from the invention as recited in claims 1 and 12.

### B. **Claims 32-48, 49**

Claims 32 and 49 were amended to reflect an embodiment of the invention in which a desired bandwidth is never less than a target bandwidth. As described above in Section I.A, Roberts teaches the opposite – that the “guaranteed rate” (GR) is less than the “available rate” (AR). Thus, Roberts teaches away from the invention as recited in claims 32 and 49.

**C. Claims 52-55**

In claim 52, the value representing the originator's requested bandwidth is fixed and the value representing the target bandwidth is modifiable, and the target bandwidth can never be greater than the requested bandwidth. As described above in Section I.A, Roberts teaches the opposite – that the “available rate” (AR) (GR) is more than the “guaranteed rate”. Thus, Roberts teaches away from the invention as recited in claim 52.

**D. Claims 57-63**

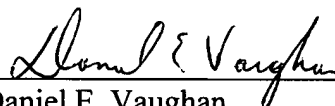
In claim 57, a fixed requested bandwidth for the channel is never less than the target bandwidth. As described above in Section I.A, Roberts teaches the opposite – that the “guaranteed rate” (GR) is less than the “available rate” (AR). Thus, Roberts teaches away from the invention as recited in claim 57.

**CONCLUSION**

No new matter has been added with the preceding amendments. It is submitted that the application is in suitable condition for allowance. Such action is respectfully requested. If prosecution of this application may be facilitated through a telephone interview, the Examiner is invited to contact Applicant's attorney identified below.

Respectfully submitted,

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